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TRANSLATION

SOLAR RADIOBURST AT 28 MC/S FREQUENCY ON 12 JULY 1961

(Solnechnyy radiovsplesk na chastote 28 mgts 12 iyulya 1961 g)

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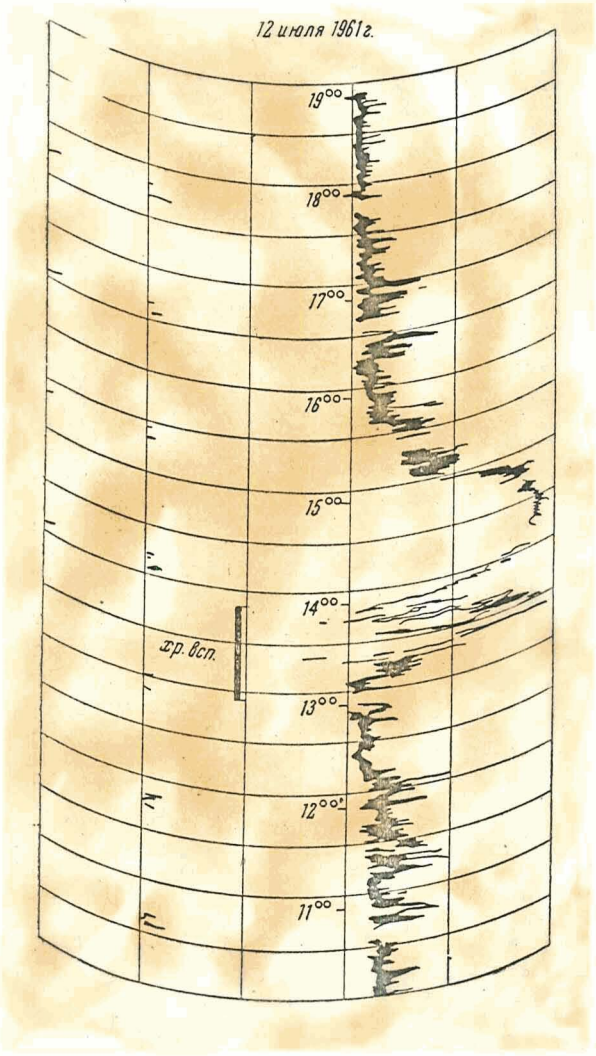
by N. P. Ben'kova
P. I. Turbin
M. D. Fligel'

A vast literature deals with typeIV radiobursts attending major chromospheric flares, where questions of spectral characteristics, of radioburst generation mechanisms, and of geophysical correlations are discussed. However, the data published so far are mainly related to observations in a very high frequency range (hundreds and thousands of mc/s). Thus the interest of ascertaining how radiobursts are revealed at lower frequencies is obvious. The registration of cosmic radio emission at 28 mc/s frequency is constantly made in the ionosphere Division of "IZMIRAN" with the object of studying ionosphere absorption (see ref [1] for the description of the installation to that effect). It was noted at readings' examination that intense chromospheric flares, resulting as a rule in a decrease of signal's intensity (absorption increase). are sometimes attended by a an increase in signal's intensity. A very sharp increase of the signal was noted during the chromospheric flare of 12 July 1961. It may be seen from the graph, that normal registering began to be upset at 1325 hours (the time in the Figure is the 45°E meridian time), i.e. 27 minutes after the detection of the optical flare and concomittantly with the beginning of the radioburst at 208 and 545 Mc/c (according to data from the IZMIRAN Laboratory of solar radio emission)

The disturbance bore the character of sharp oscillations, while the greatest increase in intensity exceeded 2.7 decibels (the mean signal level in quiet hours of the night, being taken as the zero level, when the influence of ionosphere abosrption is very small). The second phase of the disturbance at 1354 hours with another oscillation regime: comparatively smooth with small fluctuations of signal intensity increase (maximum increase > 3 dcb). During the described period, the direction toward the Sun was at a 69° angle with the main antenna leaf receiving the cosmic radio emission. Bearing in sight a braod diagram of antenna direction (~60° by the half-power), and also the possibility of presence of lateral leafs, one may estimate with a good degree of probability that the above-described disturbance in the intensity of radio emission is the result of the received solar radioburst. A comparison with the registration data obtained in the Radio Emission Laboratory corroborates this assumption. The first phase of the disturbance may in our opinion



be identified with a Type II radioburst, which, according to [2], often precedes the Type IV radioburst. The second disturbance phase is a typical Type IV radioburst. The above-presented data about the 23 mc/s radioburst lead to the following conclusions:

1. The chromospheric flare of 12 July 1961 was attended by Type II and Type IV radiobursts, clearly distinct in time and in their respective character.

2. During the Type II and IV radiobursts, the intensity of radio emission increases not only in the centimeter and meter bandwidths, but also in the 30 mc/s (10 meter) band. But the opinion about the fact that Type II radiobursts' spectrum intensity drops rapidly with the decrease in frequency is not thereby corroborated.

3. The different character of radio emission during the time of Type II and Type IV radiobursts confirms the Mogilevskiy's assumption [2] about different generation mechanisms: plasmic oscillations in the solar atmosphere in case of Type II radiobursts, and synchrotron radiation of relativistic electrons at Type IV radiobursts.

It seems interesting to examine systematically the recordings of riometers and other installations, registering the cosmic radiation, with emphasis on solar radioburst appearance at low frequencies.

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